

UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF MICHIGAN  
SOUTHERN DIVISION

LINDA MARALDO,

Plaintiff,

v.

Case No. 23-10577

Hon. Jonathan J.C. Grey

Mag. Judge Anthony P. Patti

UNITED STATES OF AMERICA,

Defendant.

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**OPINION AND ORDER DENYING PLAINTIFF'S MOTION TO  
EXCLUDE DEFENDANT'S EXPERT OPINIONS AND  
TESTIMONY (ECF No. 34)**

**I. INTRODUCTION**

In this postal truck accident case, the Court must determine whether to exclude the opinions and testimony of the government's accident reconstruction and biomechanics expert under Federal Rule of Evidence 702. For the reasons stated below, the Court **DENIES** Plaintiff Linda Maraldo's motion to exclude the government's expert opinions and testimony. (ECF No. 34.) As the parties have adequately briefed the motion, the Court considers it without oral argument. E.D. Mich. LR 7.1(f).

## **II. BACKGROUND**

### **A. The Accident**

On March 12, 2021, Maraldo drove her 2017 Chevrolet Sonic and stopped at a red light. (ECF No. 36-2, PageID.1233, 1236.) Behind Maraldo, Cynthia O'Hara drove a United States Postal Service ("USPS") box truck. (ECF No. 33-2; ECF No. 33-3, PageID.215–216.) After the light turned green, O'Hara removed her foot from the brake. (ECF No. 33-2; ECF No. 33-3, PageID.216.) The box truck idled forward and collided with Maraldo's vehicle. (ECF No. 33-2; ECF No. 33-3, PageID.216, 218.) Maraldo claims that the accident caused neck and back pain. (ECF No. 34-1, PageID.938.)

### **B. Expert Opinion**

Dr. Jennifer Yaek, the government's expert, performed accident reconstruction and biomechanical analyses of the rear-end collision between Maraldo's vehicle and the USPS box truck. (ECF No. 34-2, PageID.984.) In preparing her expert report, Dr. Yaek reviewed several sources of information, including: (1) information about the accident, (2) eight photographs of the vehicles involved in the crash and the site of the crash, (3) repair and maintenance records for both vehicles, and (4)

Maraldo's medical records. (ECF No. 34-2, PageID.984–985.) Dr. Yaek did not physically inspect either vehicle; rather, Dr. Yaek based her observations about each vehicle's damage on her review of the documents and photographs that the government provided to her. (*Id.* at PageID.998.)

### **1. Accident Reconstruction Analysis**

Dr. Yaek's accident reconstruction analysis led her to conclude that the maximum change in velocity, or delta-V, of Maraldo's vehicle was approximately 5 miles per hour, that the closing/impact speed of the USPS truck was approximately 6–6.5 miles per hour, and that the principal direction of force applied to Maraldo's vehicle was 6 o'clock "with 12 o'clock being straight ahead on the vehicle." (*Id.* at PageID.1001.) Dr. Yaek calculated delta-V and closing speed by considering the weights of the vehicles involved in the accident, the "total crush energy (as determined from residual damage)," and the coefficient of restitution of the impact. (*Id.*) Dr. Yaek determined the weights of the vehicles by relying on vehicle specification data, medical records, and

anthropometric data.<sup>1</sup> (*Id.*) Dr. Yaek determined the total crush energy by conducting a crush analysis. (*Id.*) Dr. Yaek calculated the coefficient of restitution of the impact by relying on published, peer-reviewed literature. (ECF No. 34-2, PageID.1001.)

Dr. Yaek's crush analysis began with calculating how much force acted on the rear of Maraldo's vehicle and, similarly, on the front of the USPS truck. (*Id.* at PageID.1000–1001.) To calculate the force that acted on the rear of Maraldo's vehicle, Dr. Yaek used photos of the vehicle's "undeformed rear bumper and publicly available, peer-reviewed engineering and scientific literature." (*Id.* at PageID.1000.) Similarly, Dr. Yaek relied on peer-reviewed engineering and scientific literature and the laws of physics to calculate the force that acted on the front of the USPS truck. (*Id.* at PageID.1001.) Dr. Yaek then used an "established and commonly used methodology" to calculate the crush energy "dissipated by both the Chevrolet Sonic and the USPS truck." (*Id.*)

Dr. Yaek next used the Crash Investigation Sampling System from the National Highway Traffic Safety Administration to evaluate her

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<sup>1</sup> Anthropometry is "the science that defines physical measures of a person's size, form, and functional capacities." *Anthropometry and Work: An Overview*, CDC (Apr. 10, 2024), <https://perma.cc/T7AN-82ZW>.

delta-V calculation relative to the delta-V values in two other accidents where a vehicle rear-ended a Chevy Sonic. (*Id.*) Dr. Yaek discussed the details of the accidents in the sampling system, including the speed that each vehicle was traveling at before collision, the way that the accidents happened, the maximum delta-V values for the Chevy Sonics, and the average crush on each Sonic's rear bumper. (ECF No. 34-2, PageID.1001–1002.) Dr. Yaek also provided photos of the damaged Sonics. (*Id.* at PageID.1002–1003.) After reviewing the accidents in the sampling system, Dr. Yaek concluded that her delta-V calculation for Maraldo's accident was conservative. (*Id.* at PageID.1003.)

## **2. Biomechanical Analysis**

Dr. Yaek's biomechanical analysis led her to conclude that the accident "did not provide sufficient forces to cause motion of Ms. Maraldo's cervical or lumbar spine beyond the physiological range of motion, and would most likely not provide the type or magnitude of loading consistent with mechanisms for acute spinal injury beyond transient spinal strain." (*Id.* at PageID.1010.) Dr. Yaek reached her conclusion by analyzing how Maraldo would have moved in her vehicle

upon impact and evaluating the loads that Maraldo's spine would have experienced during the accident. (*Id.* at PageID.1004–1008.)

Dr. Yaek used the laws of physics to determine that Maraldo would have moved initially rearward and then rebound forward during the collision. (ECF No. 34-2, PageID.1004.) Dr. Yaek observed that the seat and headrest would have limited movement of Maraldo's neck and lower back during the initial rearward motion. (*Id.*) Dr. Yaek also observed that voluntary posture control, the seat, and the seatbelt would have limited Maraldo's subsequent forward motion. (*Id.*) Dr. Yaek used the results of a test performed by the Insurance Institute for Highway Safety involving a 2012 Chevrolet Sonic to illustrate Maraldo's initial motion in the vehicle on impact. (*Id.* at PageID.1004.) The test simulated a rear-end collision with a delta-V value of 9.7 miles per hour on an anthropometric test device—or crash test dummy. (*Id.* at PageID.1003–1004.)

Dr. Yaek compared the loads that Maraldo's spine would have experienced during the accident to “injury tolerances” and “loading experienced in physical tasks and activities of daily living.” (*Id.* at PageID.1005.) Dr. Yaek drew on research involving crash testing and sled testing with both crash test dummies and human volunteers at

various speeds and principal direction of force orientations. (*Id.*) Dr. Yaek found that the load that a belted occupant's cervical spine would have experienced during an accident of similar or greater severity, compared to Maraldo's accident, was: (1) similar to or less than loads generated during physical activity, and (2) "well below published injury assessment reference values." (ECF No. 34-2, PageID.1005.) Dr. Yaek also found that the loads experienced by Maraldo's neck during the accident would not have exceeded forces volitionally generated by the muscles to oppose motion in the neck. (*Id.*) Dr. Yaek made similar findings concerning the lumbar spine. (*Id.* at PageID.1007–1008.)

Dr. Yaek further drew on biomechanical and peer-reviewed studies in finding that Maraldo's accident could not have resulted in disc herniation, protrusion, or bulging absent damage to adjacent bony structures. (*Id.* at PageID.1008.) Dr. Yaek supported her overall findings by discussing pain responses of human volunteers involved in low-speed rear-end collision tests. (*Id.* at PageID.1009.) According to Dr. Yaek, some volunteers in those studies complained of transient soreness or a headache while most volunteers did not complain at all. (*Id.*) Finally, Dr. Yaek cited a study that compared prior research on human volunteers in

low-speed rear-end collisions to real-world outcomes. (*Id.*) According to Dr. Yaek, “[t]his study showed that there are a sufficient number of volunteer studies to conclude that the risk of injury beyond neck strain under similar conditions is essentially zero, where injury was defined as ‘traumatic structural damage to a tissue, (bone, ligament, tendon, disc), with an objective finding.’” (ECF No. 34-2, PageID.1009.)

### **C. Procedural History**

Maraldo filed her complaint under the Federal Tort Claims Act (“FTCA”) on March 10, 2023. (ECF No. 1.) Following the close of discovery, Maraldo filed her motion to exclude the government’s expert. (ECF No. 34.) The motions are fully briefed. (*See* ECF Nos. 34, 35.)

## **III. LEGAL STANDARD**

Federal Rule of Evidence 702 governs the admissibility of expert opinions. As the proponent of the expert testimony, the government must demonstrate to the Court that it is more likely than not that: (a) the expert’s specialized knowledge “will help the trier of fact to understand the evidence or to determine a fact in issue,” (b) “the testimony is based on sufficient facts or data,” (c) “the testimony is the product of reliable principles and methods,” and (d) “the expert’s opinion reflects a reliable



application of the principles and methods to the facts of the case.” Fed. R. Evid. 702. The expert’s knowledge must be “more than subjective belief or unsupported speculation.” *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 590 (1993). *See also Finley v. Mora*, Nos. 22-1886/1941, 2023 WL 7550447, at \*2 (6th Cir. Nov. 14, 2023) (quoting *Daubert*, 509 U.S. at 590). To assess the reliability of an expert’s method, the Court considers: (a) whether the method can be or has been tested, (b) whether the method has been subjected to peer review and publication, (c) the method’s known or potential rate of error, and (d) a method’s general acceptance in the scientific community. *Williams v. Syphan*, No. 22-3222, 2023 WL 1305084, at \*2 (6th Cir. Jan. 31, 2023) (citing *Daubert*, 509 U.S. at 593–594)).

#### **IV. ANALYSIS**

##### **A. Challenges to Accident Reconstruction Opinions**

Maraldo argues that Dr. Yaek’s accident reconstruction opinions are based on unreliable and speculative assumptions. (ECF No. 34, PageID.852.) Maraldo claims that Dr. Yaek did not conduct a crush analysis but instead formed her opinions by only looking at one photograph of Maraldo’s vehicle and one photograph of the USPS truck.

(ECF No. 34, PageID.852.) Maraldo argues that Dr. Yaek did not have information regarding the distance traveled by the USPS truck until impact, the speed of the USPS truck, the starting positions of the vehicles pre-impact, or the resting positions of the vehicles post-impact. (*Id.*) The expert report belies Maraldo's arguments.

First, Dr. Yaek's crush analysis consisted of three parts: (1) calculating how much force acted on the rear of Maraldo's vehicle, (2) calculating how much force acted on the front of the USPS truck, and (3) calculating the total crush that both vehicles dissipated. (ECF No. 34-2, PageID.1000–1001.) In performing the crush analysis, Dr. Yaek reviewed multiple photos of both vehicles and relied on “publicly available, peer-reviewed engineering and scientific literature” as well as the laws of physics. (*Id.* at PageID.998–1001.) More broadly, Dr. Yaek reviewed a repair estimate for Maraldo's vehicle, which only recommended repair and refinish of the rear bumper cover. (*Id.* at PageID.998–999.) According to Dr. Yaek, the estimate's recommendation was “consistent with the lack of visible damage or displacement of the rear bumper cover of the subject Chevrolet Sonic.” (*Id.* at PageID.999.) Maraldo does not identify why Dr. Yaek needed to physically inspect the vehicles to perform her analysis,

explain what more Dr. Yaek would have learned upon physical inspection, or explain what Dr. Yaek missed by not physically inspecting the vehicles. Maraldo's lack of explanation undermines her argument. *See Clay v. Ford Motor Co.*, 215 F.3d 663, 668 (6th Cir. 2000) (finding that the district court did not abuse its discretion in allowing plaintiff's expert testimony, in part, where defendant did not indicate how the expert's failure to inspect the subject vehicle or the expert's late visit to the accident site undermined his methodology of accident reconstruction or rendered his testimony inadmissible).

Second, Dr. Yaek performed her accident reconstruction analysis after reviewing a traffic crash report from the state of Michigan, a USPS accident investigation worksheet, and deposition testimony from Maraldo and O'Hara. (ECF No. 34-2, PageID.984.) These documents included information about the location of the collision, the approximate speed of each vehicle before the collision, and the reported positions of the vehicles relative to each other before the collision. (ECF No. 34-1, PageID.914–917; ECF No. 32; ECF No. 33-4, PageID.227–230; ECF No. 33-3, PageID.215–216, 225.) Maraldo does not explain why Dr. Yaek needed to know the positions of the vehicles after the accident to perform

an accident reconstruction analysis. More importantly, Maraldo does not challenge the bases of Dr. Yaek's delta-V calculation and principal direction of force determination, and the Court cannot discern an issue with Dr. Yaek's accident reconstruction analysis such that her opinions are inadmissible.

Maraldo further argues that Dr. Yaek did not employ in her report the same level of intellectual rigor that characterizes the practice of an accident reconstruction expert. (ECF No. 34, PageID.852.) Maraldo claims that Dr. Yaek "merely compared the damage profile depicted in the single photograph of [Maraldo's] vehicle, to two unrelated, and unverified accidents involving two different model year Chevy Sonics that were involved in collisions." (*Id.*) Maraldo asserts that Dr. Yaek did not provide the facts and circumstances of those collisions and only speculated that they were similar to the subject collision. (*Id.*) Again, the expert report belies Maraldo's argument.

Dr. Yaek compared the instant accident to two other accidents involving rear-end collisions with Chevy Sonics to evaluate her delta-V calculation against other delta-V calculations. (ECF No. 34-2, PageID.1001–1003.) The details and calculations of these other accidents

came from the National Highway Traffic Safety Administration's Crash Investigation Sampling System (ECF No. 34-2, PageID.1001.) Maraldo does not explain why that sampling system is unreliable such that Dr. Yaek should have confirmed the details of the accidents in the system herself. Dr. Yaek outlined the details of the accidents in her report, including the speed of the vehicles involved, the maximum delta-V values for the Chevy Sonics, and the average crush on each Sonic's rear bumper. (*Id.* at PageID.1001–1002.) Both of the accidents involved a vehicle rear-ending a Chevy Sonic. (*Id.* at PageID.1001–1003.) Even though the accidents involved different model year Chevy Sonics (2013 and 2015 Chevy Sonics), Dr. Yaek justified her decision to use these accidents as comparators by citing a database indicating that 2012–2020 Chevy Sonics share a vehicle platform. (*Id.* at PageID.1001 n.11.) Maraldo does not argue that the database that Dr. Yaek cited is unreliable or insufficient to support Dr. Yaek's reliance on it. Importantly, comparing the delta-V values led Dr. Yaek to conclude that her delta-V calculation of five miles per hour was "conservative." (*Id.* at PageID.1003.) She did not use the other accidents to calculate her delta-V value, and Maraldo

does not explain why Dr. Yaek's conclusion about the conservative nature of the delta-V value is unreliable.

The Court finds that Dr. Yaek's accident reconstruction analysis and opinions are admissible under Federal Rule of Evidence 702. Therefore, the Court declines to exclude these opinions.

### **B. Challenges to the Biomechanics Opinions**

Maraldo argues that Dr. Yaek's biomechanical analysis is grounded on an unreliable accident reconstruction analysis and is unsupported by the literature that Dr. Yaek cited in her report. (ECF No. 34, PageID.853.) Maraldo claims that the peer-reviewed literature that Dr. Yaek cites does not address injury tolerance and the effect of forces on an aged spine like Maraldo's. (*Id.* at PageID.853–854.) The Court finds that these are not reasons to exclude Dr. Yaek's biomechanics opinions and analysis.

First, as discussed above, Dr. Yaek performed a reliable accident reconstruction analysis. To perform her biomechanical analysis, Dr. Yaek applied her delta-V calculation, principal direction of force determination, and the circumstances of the collision to describe how Maraldo's body would have moved during the collision. (ECF No. 34-2,

PageID.1004–1005.) Dr. Yaek also compared the forces that Maraldo’s neck and back would have experienced during the accident to the forces that one’s neck and back might experience in accidents of similar or greater severity and in activities of daily living. (*Id.* at PageID.1005–1008.) The biomechanical analysis relied on the laws of physics and research involving crash testing and sled testing with crash test dummies and human volunteers at various speeds and principal direction of force orientations. (*Id.* at PageID.1004–1008.) The Court finds that this analysis and the resulting opinions are reliable.

Second, Maraldo’s criticisms of the literature that Dr. Yaek cites are immaterial to any of the *Daubert* factors. Maraldo does not argue that her criticisms of the literature: (1) render Dr. Yaek’s testimony unhelpful to a trier of fact in understanding the evidence or determining a fact in issue, (2) show that the testimony is based on insufficient facts or data, (3) demonstrate that the testimony is not the product of reliable principles and methods, or (4) establish that the testimony is not a reliable application of principles and methods to the facts of the case. At best, Maraldo’s critiques of the literature go to the weight of Dr. Yaek’s opinion, not its admissibility. *See Thompson v. Orkin, LLC*, No. 20-CV-

13085, 2025 WL 18639, at \*13 (E.D. Mich. Jan. 2, 2025) (citing *Elosu v. Middlefork Ranch Inc.*, 26 F.4th 1017, 1024 (9th Cir. 2022)) (“A challenge to the factual bases for an expert’s testimony generally goes to the weight of the testimony, not to its admissibility.”). Therefore, the Court declines to exclude Dr. Yaek’s biomechanical analysis and opinions.

## **V. CONCLUSION**

For the reasons stated above, the Court **DENIES** Maraldo’s motion to exclude the government’s expert opinions and testimony. (ECF No. 34.)

**SO ORDERED.**

Date: March 31, 2025

**s/Jonathan J.C. Grey**  
Hon. Jonathan J.C. Grey  
United States District Judge



**Certificate of Service**

The undersigned certifies that the foregoing document was served upon counsel of record and any unrepresented parties via the Court's ECF System to their respective email or First-Class U.S. mail addresses disclosed on the Notice of Electronic Filing on March 31, 2025.

**s/ S. Osorio**

Sandra Osorio

Case Manager